PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BCHydro

BRITISH COLUMBIA

A Reconnaissance Survey of Dina Lake (#3)

A. R. McLean
1992

PWFWCP Report No. 111

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: A. R. McLean. 1992. A reconnaissance surveyof Dina Lake (#3). Peace/Williston Fish and Wildlife Compensation Program, Report No. 111. 22pp plus appendices.

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105-02831/

A RECONNAISSANCE SURVEY OF

DINA LAKE (#3)

WATERSHED: Parsnip River

DATE OF SURVEY: June 4. 5. 1992

FIELD CREW LEADER: A.R. McLean

FIELD ASSISTANT: M. Hunter

PEACE FISHERIES COMPENSATION PROGRAM

B. C. HYDRO

ENVIRONMENTAL RESOURCES

and

B.C. ENVIRONMENT

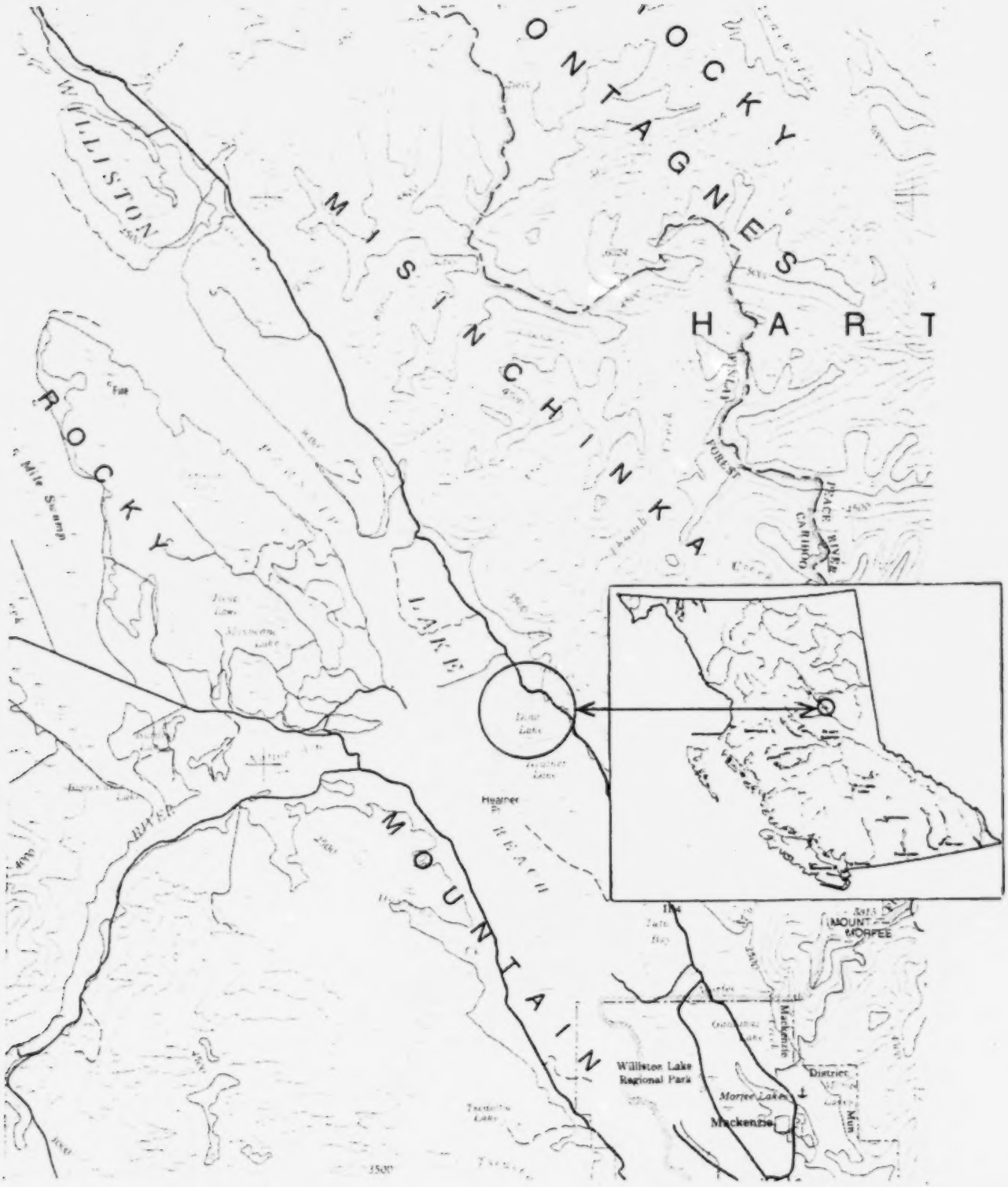
FISH AND WILDLIFE BRANCH

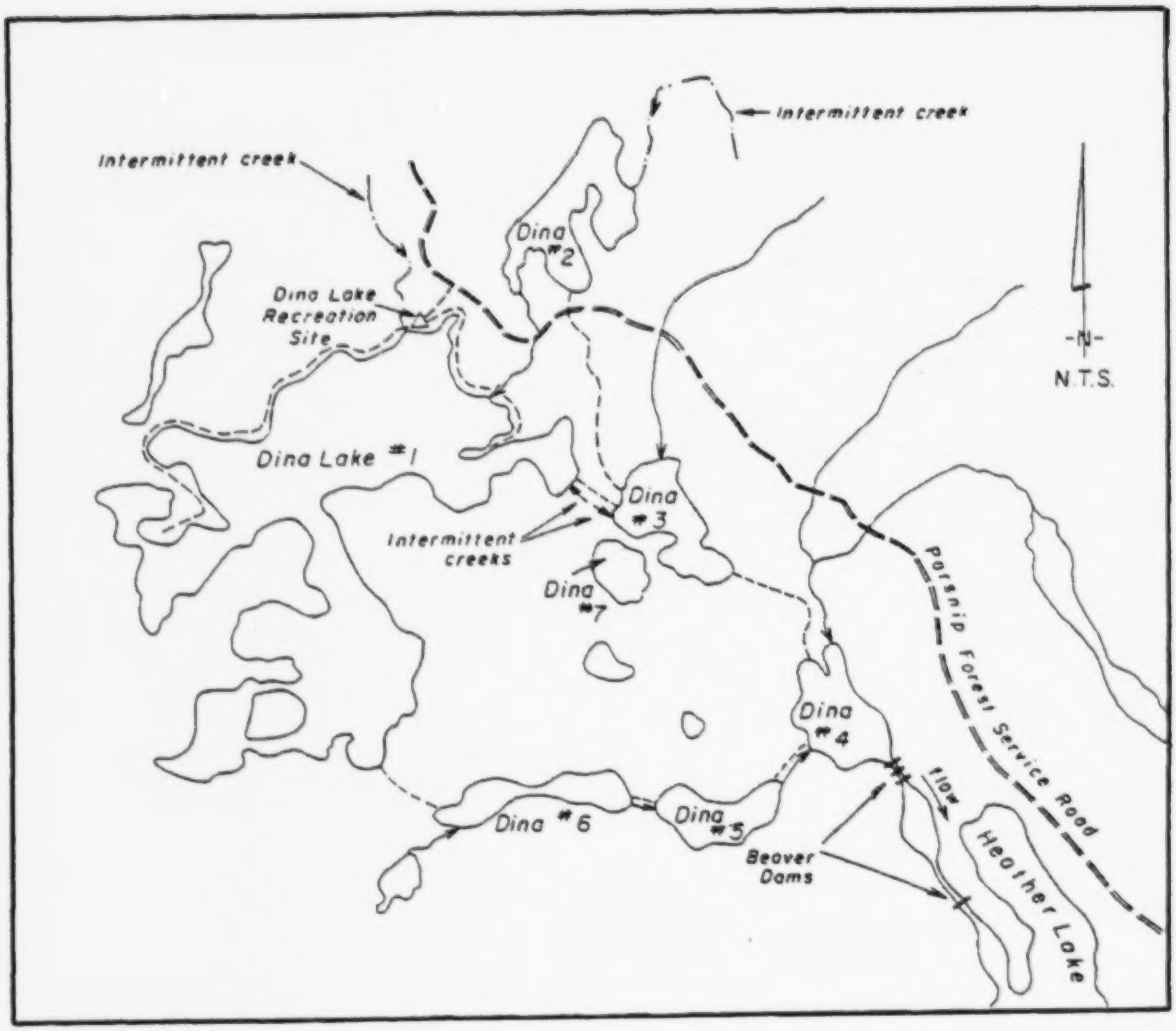
REPORT PREPARED BY: A.R. McLean

RELEASED BY: _____

D.H.G. Ableson, Regional Fisheries Biologist

Location of Dina Lakes Scale 1:250 000





The Dina Lakes.

LAKE: **Dina Lake (#3)** **SYSTEM NAME: --**

A.S.A.P. REFERENCE NO.: **SYSTEM NO: 230-9033-051-473-389**

DATA ON FILE FOR THIS SURVEY

Location	X	Dissolved O2/Temp. Profiles	X
Physical Data	X	Winter Dissolved 02/Temp. Profiles	X
Bench Mark	X	Netting Record	X
Terrain Features	X	Lake Catch Summary	X
Access	X	Individual Fish Data	--
Resorts and Campsites	X	Fish Preserved	--
Other Developments	X	Stomach Analysis	--
Obstructions and Pollutions	X	Scale Reading	--
Special Restrictions	X	Location of Inventory Sites	X
Aquatic Plants	X	Photograph Directory	X
Wildlife Observations	X	Appendices:	
Miscellaneous Comments	X	A: Water Chemistry Analysis	X
Lake Drainage	X	B: Tributary Stream Data	X
Fisheries Management Comments	X	Bathymetric Map Reduction	X
History of Previous Surveys	X	Bathymetric Map	X
Water Chemistry Summary	X		

LOCATION

Location: 25 km north, north west of Mackenzie
Elevation: 693 m +/-
Latitude/Longitude: $55^0$31'24":$123^0$17'00" U.T.M.: 10.4821.61528
Management Unit: 7-30 N.T.S. Map No.: 93-0/11

Drainage: Internal drainage.

PHYSICAL DATA

Lake Drainage Area:	--	km^2	Volume:	749000	m^3
Water Surface Area:	171800	m^2	Flushing Rate:	--	
Area above 6 m contour:	124100	m^2	Perimeter of Islands:	--	m
Shoreline Perimeter:	2334	m	Number of Islands:		0
Maximum Depth:	12.4	m	Mean Depth:	4.4	m
Filterable Residue (TDS):	126	mg/l	Secchi Reading:	5.2	m

Sounding Device: Lowrance X-15 Elevation Source: Contour interpolation

BENCHMARK

(Iron spike, center of red circle) located approx. 1.0 m from the southeast shoreline (at portage trail access point), in a 27 cm diameter spruce tree. Bench mark is set 2.0 m above current lake level.

High water mark: lake is at maximum pondage.

Lake: **DINA #3**

TERRAIN FEATURES

Immediate Shoreline:

The lake shore slope is moderate to steep on the west and south shores, low on the north and steep on the east shore. Dina Lake #3 is treed to water's edge (50% spruce, 50% alder) with the exception of the sporadically treed east shoreline. Raised water levels has flooded the foreshore forested areas on the north and northwest shores. A fringe of shrub fronts the shoreline. Sedgegrass extends into the lake on the northwest and north shores. Shoreline substrate consists of organics, fines, large gravel and small cobble. Lake bottom drops off low to moderately on the north basin and moderate to steep on the south basin. A navigable shallows (fines) separates the two basins. Boating access to the lake is best suited to the portage trails (B.C. Forest Service) located at either ends of the lake. Boating access to land is moderate.

Surrounding Country:

Forest cover is complete, primarily consisting of trembling aspen and spruce, with low amounts of birch and cottonwood noted. Dina Lake #3 is surrounded by gently rolling terrain, with the exception of the moderate to steep sloped east. The lake is situated within the sub-boreal spruce biogeoclimatic zone.

Lake: **DINA #3**

ACCESS

Directions:

From Mackenzie, at the junction of Centennial and Mackenzie Boulevard, drive north on Mackenzie Boulevard (Highway On the outskirts of town (where gravel starts) the road becomes known as the Finlay Forks Forest Development Road. Proceed along the Finlay Forks Forests Development Road, turning left at the "Dina Lake Recreation Site" sign. The Dina Lake Recreation Site is located approximately 28.6 km north of Mackenzie. One can then gain access into Dina Lake #3 via the Dina Lake Canoe Circuit. A 240 m portage is necessary between Dina Lake #1 and Dina Lake #3.

Road Type and Conditions:

Highway 39 is a well maintained, paved, two-lane highway. Finlay Forks Forest Development Road is a poor, two-lane logging road.

Restrictions:

None noted.

RESORTS AND CAMPSITES

None, but a recreation site location may be ideally suited to the southwest shoreline.

OTHER DEVELOPMENTS

An observing platform was noted in a tree located on the northwest shoreline.

OBSTRUCTIONS AND POLLUTIONS

None.

Lake: **DINA #3**

SPECIAL RESTRICTIONS

None noted.

AQUATIC PLANTS

Sedgegrasses were sparsely located along the north and northwest shores. No samples were collected.

WILDLIFE OBSERVATIONS

moose scat

1 woodpecker

3 species of waterfowl

1 loon

1 beaver

MISCELLANEOUS COMMENTS

Gammarus were noted in high quantities in the upper 1.5 m of the water column.

A management plan, encompassing all the Dina Lakes, has been produced by D.A. Jesson, Fish and Wildlife, B.C. Environment, Prince George.

Bathymetric map: The lake outline is from an enlargement of aerial photograph B.C. 7327 No. 121, flown July, 1971.

Lake: **DINA #3**

LAKE DRAINAGE

General:

Dina Lake #3 has 1 inlet and no outlets.

Major Systems:

None.

Minor Systems:

Unnamed C. - inlet #1

The initial 250 m of this inlet was investigated. Draining into the north end of the lake, this inlet had an average wetted width of 0.85 m, average depth of 10 cm, water temperature of 6°C. and a field gradient of 1.5%, approximately 230 m upstream of the lake. This inlet has very small amounts of usable spawning substate, but good rearing habitat throughout (undercut banks, LOD, overstream vegetation, instream vegetation).

See point sample card for additional information.

Post survey note: Flow was noted in inlet #1 in November, 1992.

Lake: **DINA #3**

FISHERIES MANAGEMENT COMMENTS

An overnight net set and two minnow traps yielded no fish. The lake is therefore believed to be barren of all fish species. The inlet provides very minimal spawning habitat, but good rearing habitat throughout. High densities of Gammarus were observed in the lake during the survey. Winter oxygen data collected during 1990/91 and 1991/92 appear low for overwintering a fish population.

Introducing a sportfish species into Dina Lake #3 is an enhancement option. In addition, gravel placement and habitat complexing in inlet #1 could significantly increase natural production, should this lake be stocked.

Post Survey Note: On September 1, 1992, Dina Lake #3 was stocked (with the assistance of the Mackenzie Fish & Game Club) with 5,000 rainbow trout (Dragon Lake stock, fall fry).

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

An oxygen/temperature series was collected on March 18, 1991 and February 2, 1992 by the Peace Compensation Program, Prince George, B.C.

Other Related Surveys:

None known.

Lake: **DINA #3**

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions:

Date:	June 5, 1992		
Time:	1000 hrs	Air Temperature:	19°C
Wind Velocity:	2 km/hr	Wind Direction:	south
Cloud Cover:	0/10 o.c.	Surface Condition:	calm
Secchi Disc:	5.2 m	Water Colour:	gin clear

Method(s) Used:

Dissolved Oxygen:	YSI model 58 Oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
Ph (field):	Digital pH pocket tester
H2S (field):	Hach H2S field test kit
Laboratory Used:	Zenon Environmental Inc. B.C. Laboratory Services
Water Sampler:	Verticle Alpha Water Bottle (Vandorn)
Substrate Sampler:	Substrate sample not taken

Water Sample Chemistry: SEAM Site No.: Not determined.

	Sampling Depths	
	Surface (O m)	Lower (11.0 m)
pH (field)	8.7	7.7
pH (lab)	8.1	7.5
Specific Conductance (lab)	204 umhos/cm	240 umhos/cm
Filterable Residue 105°C (lab)	126 mg/l	1 54 mg/l
H2S (field)	-- mg/l	0 mg/l
Bottom Depth:	11.6 m	
Substrate Sample Depth:	-- m	

Note: Hydrogen Sulphide odour detected.

Lake: **DINA #3**

DATE: June 5, 1992

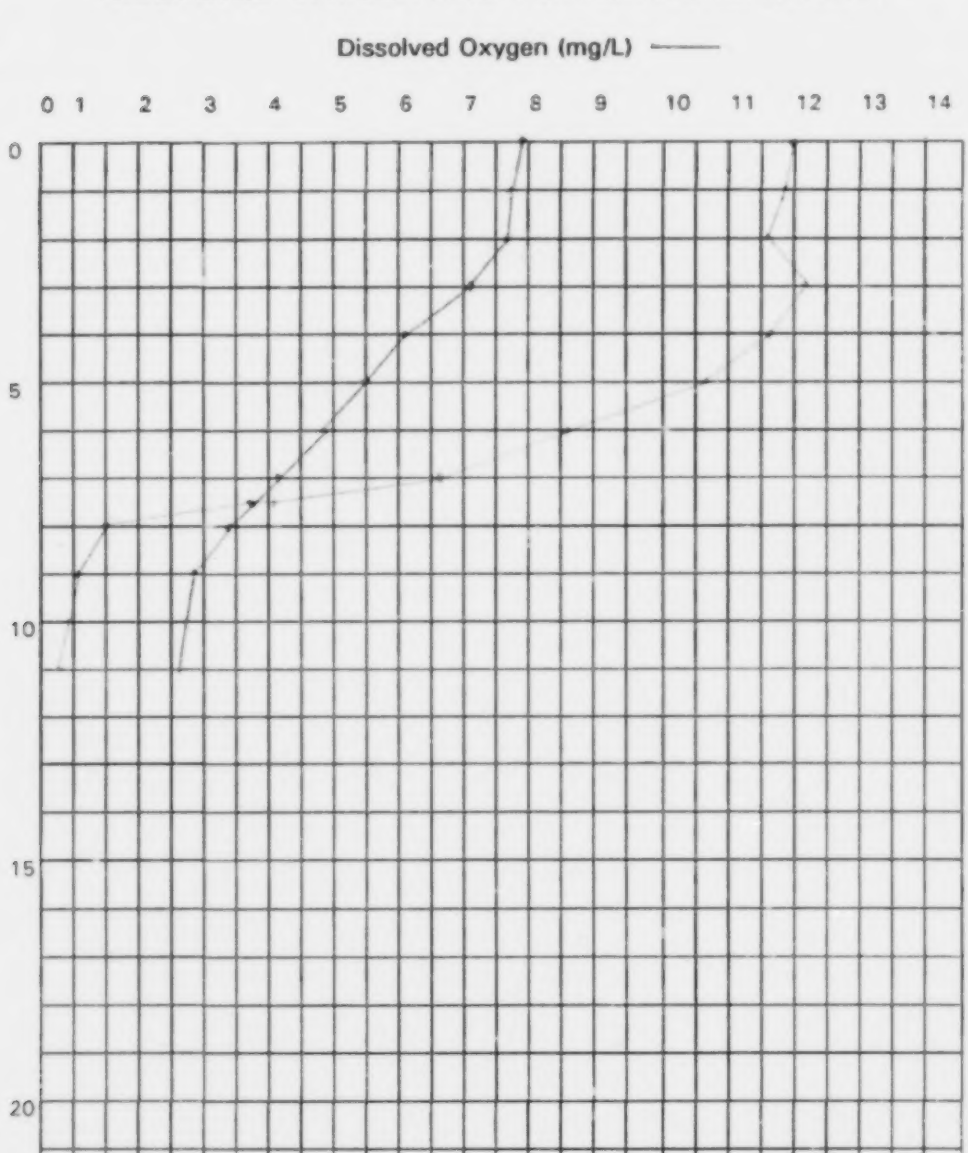
SUMMER OXYGEN/TEMPERATURE DATA

DEPTH (m)	02 (mg/l)	TEMP (°C)
Surface	12.0	14.8
1.0	11.9	14.5
2.0	11.6	14.3
3.0	12.2	13.2
4.0	11.7	11.2
5.0	10.7	10.1
6.0	8.6	8.9
7.0	6.7	7.3
7.5	4.1	6.5
8.0	1.5	5.8
9.0	1.1	4.8
10.0	0.9	4.5
11.0	0.8	4.3
12.0	Bottom	

Lake: **DINA #3**

SUMMER

DISSOLVED OXYGEN AND TEMPERATURE SERIES



Lake: **DINA #3**

Date:	March 18, 1991	Crew:	A.R. McLean
Time:	1430 hrs	Snow depth:	4.0 cm
Air temp.:	9.0°C	Ice depth:	64.0 cm
Wind:	very light	Weather:	clear/sun

WINTER OXYGEN/TEMPERATURE DATA

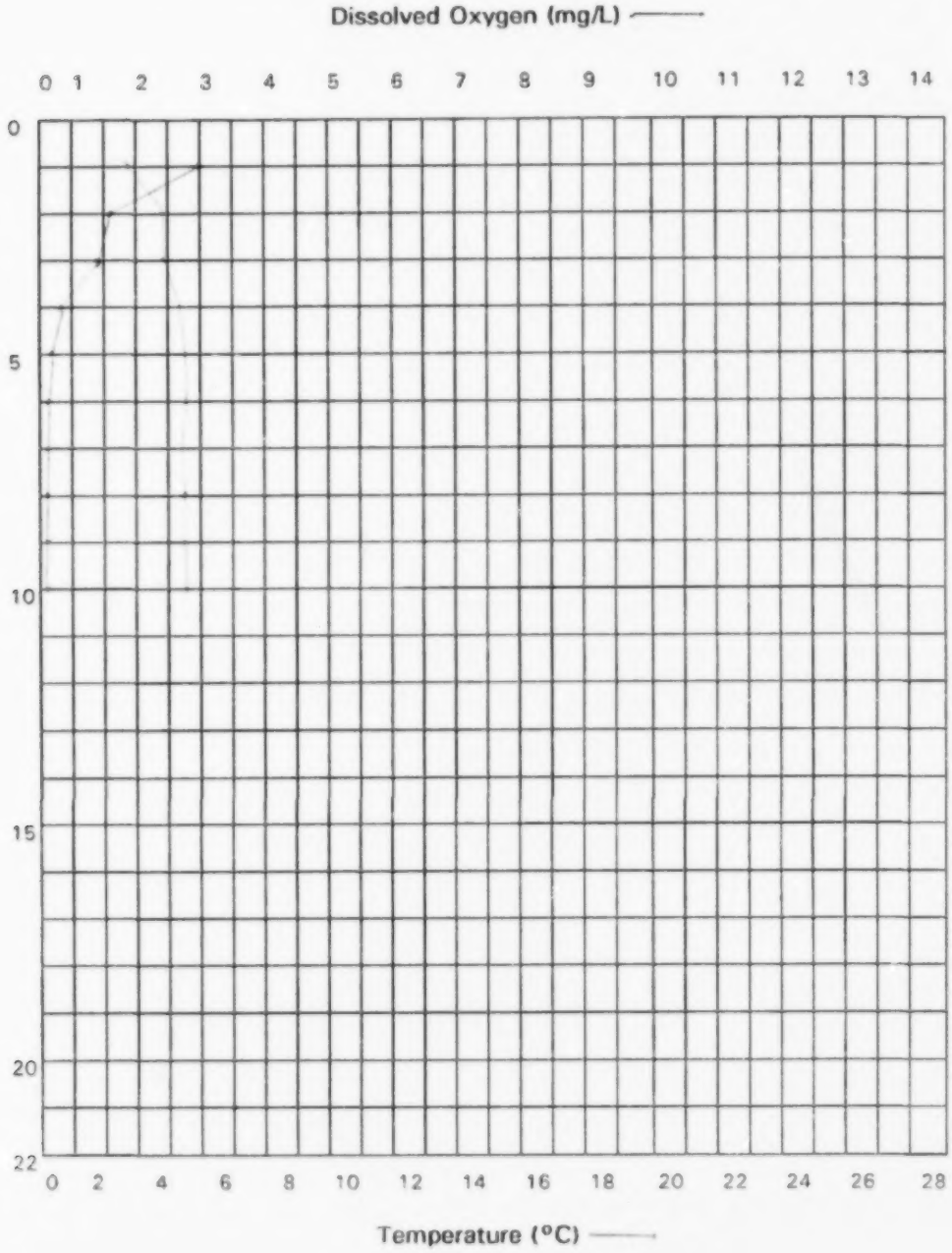
DEPTH (m)	02 (mg/l)	TEMP (°C)
Surface *	-	-
1.0	3.0	2.8
2.0	1.6	3.8
3.0	1.4	3.9
4.0	0.7	4.3
5.0	0.4	4.4
6.0	0.3	4.5
7.0	0.3	4.4
8.0	0.3	4.5
9.0	0.2	4.5
10.0	0.1	4.6
11.3	bottom	

* Surface if referenced from top of ice, ie. surface = top of ice.

Lake: **DINA #3**

WINTER

DISSOLVED OXYGEN AND TEMPERATURE SERIES



Lake: **DINA #3**

Date:	February 3, 1992	Crew:	A.R. McLean A.R. Langston
Time:	0900 hrs	Snow depth:	2.0 cm
Air temp.:	7.0°C	Ice depth:	70.0 cm
Wind:	nil	Weather:	clear/sun

WINTER OXYGEN/TEMPERATURE DATA

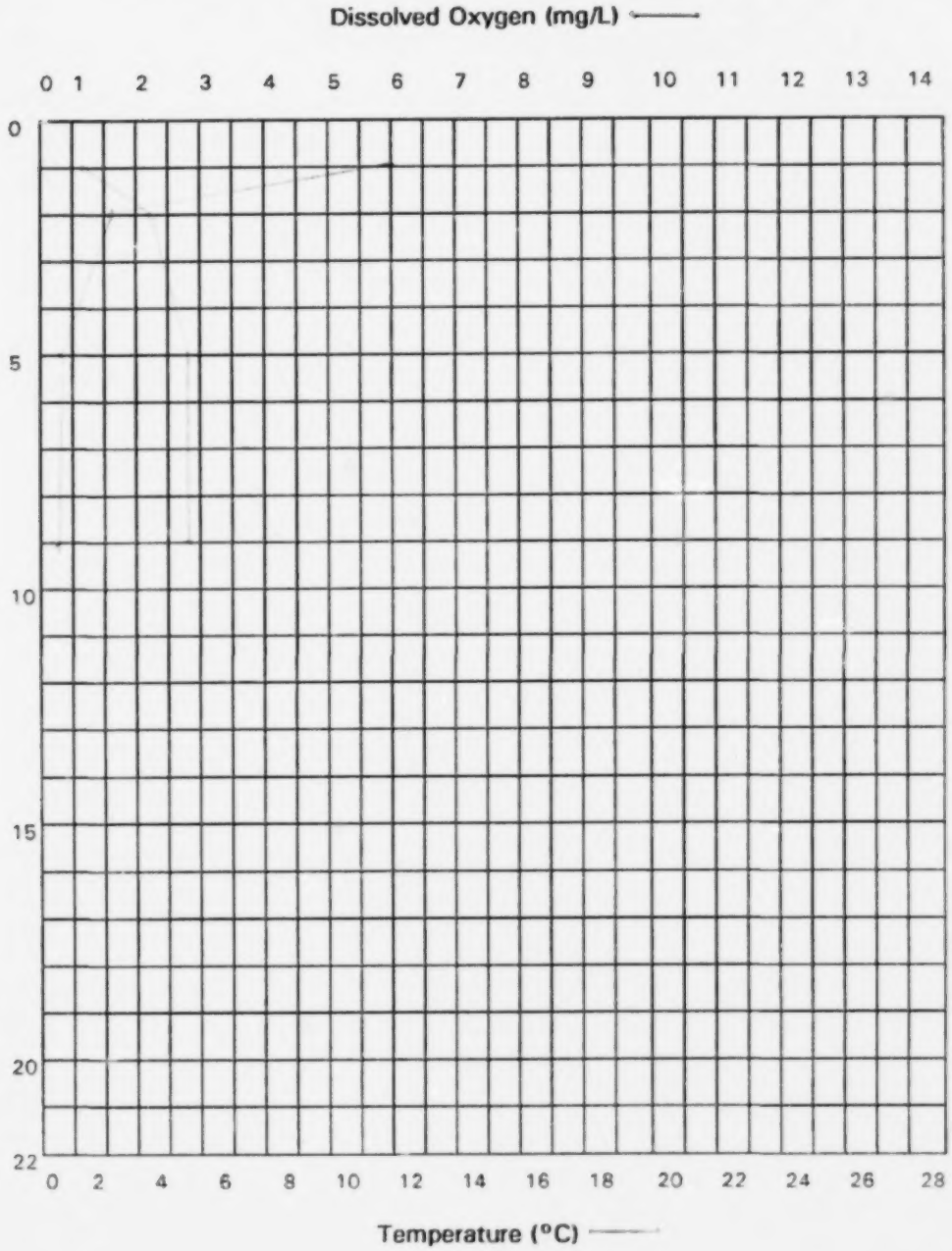
DEPTH (m)	02 (mg/l)	TEMP (°C)
Surface *	-	-
1.0	6.0	1.4
2.0	1.6	3.5
5.0	0.7	4.6
9.0	0.5	4.6
9.6	Bottom	

* Surface if referenced from top of ice, ie. surface = top of ice.

Lake: **DINA #3**

WINTER

DISSOLVED OXYGEN AND TEMPERATURE SERIES



Lake: **DINA #3**

NETTING RECORD

Mesh sizes experimental order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE #1

Type:	Sinking monofilament		
Date Set:	June 4, 1992	Time:	1600 hrs
Date Lifted:	June 5, 1992	Time:	0920 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.0 m
		Substrate:	fines
Deep End Mesh Size:	64 mm	Depth:	7.5 m
		Substrate:	7

LAKE CATCH SUMMARY

No fish netted.

Minnow Traps:

BAIT: Sardines

#	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	17.6	1.5	organics	8 beetles, 4 leeches	
2	17.6	1.5	fines	16 leeches, 1 beetle, 3 dragon fly nymphs	

1	Plate number, area, and direction
2	Point sample, number, and location
	Bench mark
LS 1	Limno station location and number
0 - - - 0 NS 1	Netting site location and number
1	Stream flow direction and number

LOCATION OF INVENTORY SITES

Figure 1
Lake: DINA (#3)
Reference No.: B.C. 7327:121
Reference Date: July, 1971
Scale 1:3550

Lake: **DINA #3**

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
R4:8,9	1	Panoramic view looking southeast, taken from middle of lake.
R4:4	2	Upstream view at point sample site #1, taken approx. 230 m upstream from lake on inlet #1
R4:5	3	Downstream view at point sample site #1, taken approx. 230 m upstream from lake on inlet #1.
R4:10	4	View of ridge separating Dina Lake #3 from Dina Lake #7, taken from middle of lake.

Plate 1: Panoramic view looking southeast, taken from middle of lake.

Lake: DINA #3

Plate 2:
Upstream view at point sample site #1, taken approx. 230 m upstream from lake on inlet #1.

Plate 3:
Downstream view at point sample site #1, taken approx. 230 m upstream from lake on inlet #1.

Plate 4:
View of ridge separating Dina Lake #3 from Dina Lake #7, taken from middle of lake.

Appendix A
LABORATORY REPORT
Water Chemistry Analysis

B.C. LABORATORY SERVICES
Report for Form 10004020

'SH - PRINCE GEORGE ATTN: BLACKMAN B
Client Code BD

Site: NOSITE DINA LAKE #3

Submitted by (23286) BLACKMAN B

B.C. ENVIRONMENT
JUN 30 1992
RECEIVED
PRINCE GEORGE, B.C.

Address (07) Waste Management Branch
Northern Region
3rd Floor, 1011 4th Avenue
Prince George, BC V2L 3H9

Phone No. 565-6944

Audit Sample ( )
Client study reference code ( )
Sampling agency code (91)

Site (NOSITE) DINA LAKE #3

Sample Adjective ( )
Sample State (FW) Fresh Water
Sample Descriptor (GE) General

This form was processed to the computer on 8-JUN-1992 as REGULAR
The cost for analyzing samples for this form is

Routine analysis:	$	119.76
Special analysis:	$	0.00
Total	$	119.76

"'SH - PRINCE GEORGE ATTN: BLACKMAN B Sample 92010971
Client Code BD

Site. NOSITE DINA LAKE #3

From :92/06/05:0001 To :92/06/05:0001
Depth Range : 0.0 0.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
pH	8.1	pH units	Automated pH Meter (00041220/02/01)
Residue Nonfilt.	< 1	mg/L	Gravi 9 cm Buchner, 105C (00081070/02/01)
Specific Conductance	204	uS/cm	Cond Meter Siebold (00111160/02/01)
Res. Filterable 1.0u	126	mg/L	Gravimetric 1.0u Filter (007H1032/02/01)
Alkalinity Total 4.5	90.1	mg/L	Automated Electrometer (01021210/02/01)

Site: NOSITE DINA LAKE #3

From : 92/06/05: 0002 To : 92/06/05: 0002
Depth Range : 11.0 11.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
pH	7.5	pH units	Automated pH Meter (00041220/02/01)
Residue Nonfilt.	3	mg/L	Grav: 9 cm Buchner, 105C (00081070/02/01)
Specific Conductance	240	uS/cm	Cond.Meter Siebold (00111160/02/01)
Res Filterable 1.0u	154	mg/L	Gravimetric 1.0u Filter (007H1032/02/01)
Alkalinity Total 4.5	115	mg/L	Automated Electrometer (01021210/02/01)

Appendix B
TRIBUTARY STREAM DATA

Lake: **DINA #3**

System Name: **Unnamed C.** **inlet #1**

Site Location: Sample Site #1, located approx. 230 m upstream on lake.

Date:	June 4, 1992	Time:	1046 hrs
Channel Width:	0.85 m	Water Temp.:	6.0 °C
Wetted Width:	0.85 m	Stage (flow)	high
Max. Depth:	12.0 cm	Velocity:	0.3 m/sec
Avg. Depth:	10.0 cm	Field Gradient:	1.5 %
Turbidity:	12.0 cm	Colour:	clear
Flood Signs:			
Height:	10.0 cm		
Type:	woody debris		

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
80 %	20 %	-- %	-- %
Boulder	**Bedrock**		
-- %	-- %		

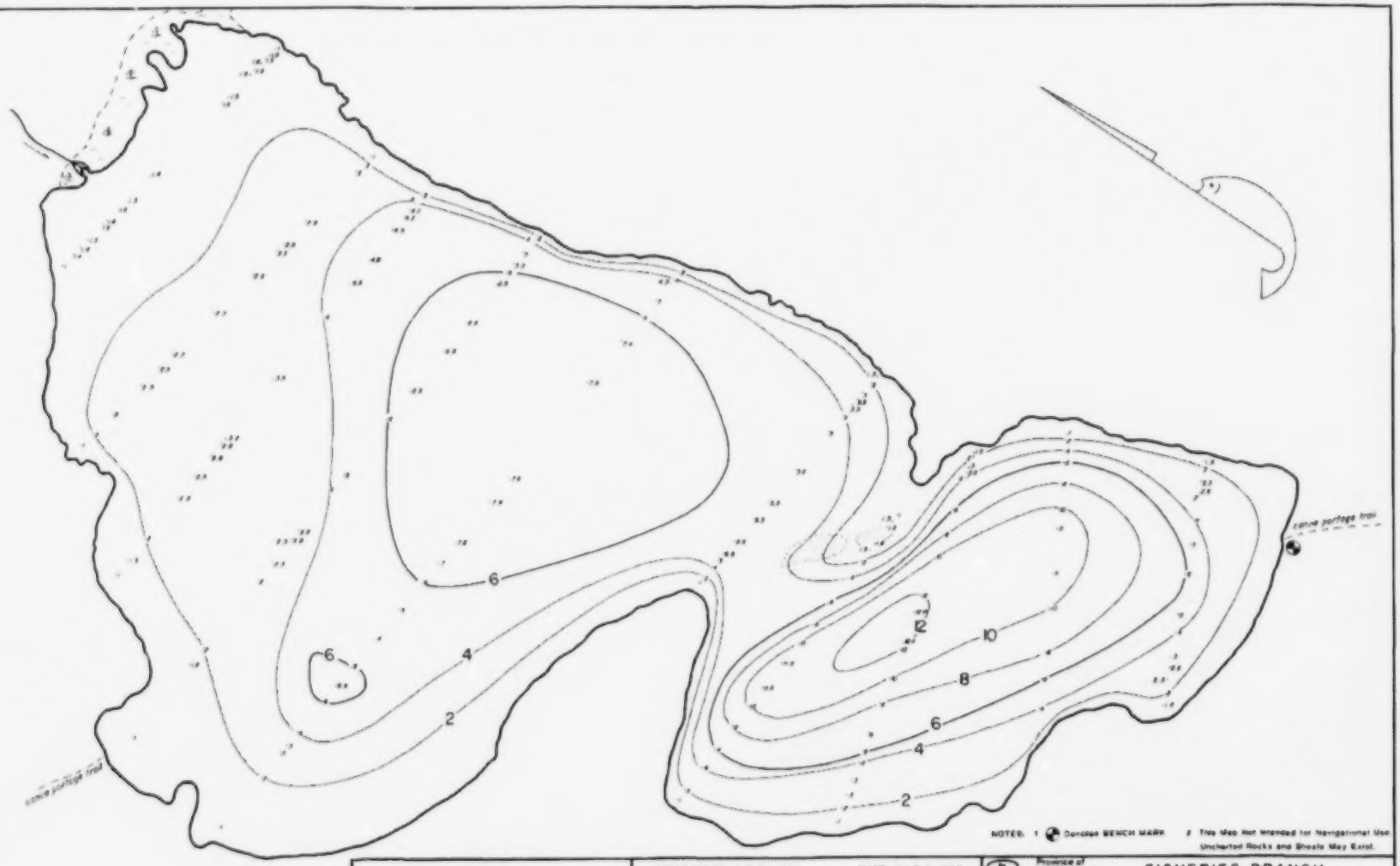
Substrate Compaction: moderate Sand: 20 %

Banks:

	Form	Height	Stability
Right	straight	15.0 cm	stable due to rooted vegetation
Left	straight	21.0 cm	stable due to rooted vegetation

Comments:

Velocity measured over 3.0 m.
Field gradient measured over 10.0 m.
Very low amounts of usable spawning habitat.
Good rearing habitat (undercut banks, LOD, overstream vegetation, instream vegetation)



NOTES: 1. Denotes BENCH MARK. 2. This Map Not Intended for Navigational Use. Uncharted Rocks and Shoals May Exist.

Reduced to 50% of Original

INSET MAP
Scale 1:250,000

SURVEYED BY: A.R. McLEAN DATE: JUNE 4, 1992
OUTLINE SOURCE: BCC 93-1 (May 14, 1989)

STATISTICS AT TIME OF SURVEY

ELEVATION	693 m.
SURFACE AREA	171 800 sq. m.
AREA ABOVE 6m. CONTOUR	124 100 sq. m.
VOLUME	749 000 cu. m.
MEAN DEPTH	4.4 m.
MAX. DEPTH	12.4 m.
PERIMETER, MAIN SHORE	2334 m.
PERIMETER, ISLANDS	m.
BENCH MARK HEIGHT ABOVE WATER LEVEL	2.0 m.

Province of British Columbia Ministry of Environment

FISHERIES BRANCH
INVENTORY OPERATIONS

DINA LAKES (#3)

DEPTHS IN METERS

WATERSHED CODE 230-8033-09-473-389	U.T.M. CO-ORDINATE 10 496650/5967	
SURV. R.M.	FAIR DWG. R.M.G.	REV. DATE
PLOTTING A.L.P.	FAIR DWG. CHECK	SCALE 1:1500
CONTOURS J.A.P.	DRAFT DATE OCT. 30/92	
CALCULATIONS J.A.P.	APPROVED	NTS NO. 930/11
TECH. CHECK		